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The Discovery of *Balmeisporites* from the Taipinglinchang Formation in the Jiayin Basin, Heilongjiang and Its Significance

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Indications of oil and gas have been found in the mudstone of Taipinglinchang formation in Sunwu-Jiayin basin, which is the second important basin for exploration outside the Daqing oil field in 2001. Abundant *Balmeisporites* including *Balmeisporites* cf. *kondinskayae* Srivastava et Binda, *Balmeisporites jiayinensis* sp. nov., *Balmeisporites taipinglinchangensis* sp. Nov., Balmeisporites? sp. 1 and Balmeisporites? sp. 2, have been found for first time in the mudstone lower Taipinglinchang Formation. The discovery is abundant of fossils in the section that Taipinglinchang Formation was established, and provides important basis for correlation of lithologic stratum units and outcrop sections. The *Balmeisporites* being not a type with the equator processes show typical characteristics of Late Cretaceous. The fossils of spore-pollen, Ostracoda and conchostracans being Late Cretaceous Santoian-Campanian in the formation can be correlated to that of the Songliao basin. Palaeoclimate indicated by the *Balmeisporites* was moist subtropics, and palaeoenvironment of the *Balmeisporites*-bearing stratum was delta front or prodelta.
Key words: Jiayin basin, Taipinglinchang Formation, Late Cretaceous, megaspore

Stratigraphy, Biology and Environment of the E1 Core from the East China Sea since the Late Pleistocene

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The water depth of the E1 core from the East China Sea is at 100 meters deep, it is the only one hole of the deepest in water depth, the densest in sampling density, and the most detail in study untill now. Based on the researches of the foraminiferal fauna and the isotopic ^{14}C dating, it has been found that the stratigraphy of the E1 core can be divided into three phases: (1) S_1–S_3 (0.00–3.34 m) fall into the Holocene; (2) S_4–S_{24} (3.34–53.43 m) belong to the late Pleistocene; (3) S_{25} (53.43–55.63 m) is part of the middle Pleistocene. The foraminiferans are mainly of the planktonic species, which belong to the tropical to subtropical fauna. There were three high sea level periods in this area since late Pleistocene: the first high sea level period corresponds to the Zhengjiang transgression in the Yangtze River delta plain, the Tianjin transgression in North China plain, and the Changle transgression in the South China, it belongs to Holocene and outer neritic environment; the second high sea level period corresponds to the Gehu transgression in the Yangtze River delta plain, the Cangzhou transgression in the North China plain, and the Fuzhou transgression in the South China, it falls into late period of the late Pleistocene and outer neritic sediments; the third high sea level period is corresponding with Jiangyin transgression in the Yangtze River delta plain and the Baiyangdian transgression in the North China plain, it can be classed to the early period of the late Pleistocene and middle to outer neritic province. The marine sediments at the top of the middle Pleistocene, it had been exposed into the land during the low sea level period of the latest middle Pleistocene, it's original environment may fall into inner to middle neritic zone.
Key words: East China Sea, late Pleistocene, stratigraphy, foraminifera, environment

A Large-scale Salt Nappe Complex in the Leading Edge of the Kuqa Foreland Fold-Thrust Belt, Tarim Basin, Northwest China

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The tectono-stratigraphic sequences of the Kuqa foreland fold-thrust belt, northern Tarim basin, Northwest China, can be divided into the Mesozoic sub-salt sequence, the Paleocene–Eocene salt sequence and the Oligocene–Quaternary supra-salt sequence. The salt sequences are mainly composed of light gray halite, gypsum and marl and brown clastics. A variety of salt-related structures have developed in the Kuqa foreland fold-thrust belt, in which the most fascinating structure is the salt nappe complex. Based on field observations, seismic interpretation and drilling data, a large-scale salt nappe complex has been identified. It trends approximately east-west for over 200 km and occurs along the western Qiulitag Mountain. Its thrusting displacement is more than 30 km. The salt nappe complex occurs as an arcuate zone projecting southwestward along the leading edge of the Kuqa foreland fold-thrust belt. The major thrust fault is developed along the salt beds of the Paleocene–Eocene. The allochthonous nappes are large N-dipping faulting monoclines composed of Paleocene–Pliocene

sediments, thrusting on the autochthonous Meso-Cenozoic successions. According to the geological analysis and cross-section restoration, the salt nappes were mainly formed in the late Himalayan stage since the end of Neogene and are still active intensively at present. Because of the inhomogeneous thrusting, there are great differences in the displacement and occurrence of the thrust, the superimposition of the allochthonous and autochthonous sequences, and the development of the salt-related structures, indicating a feature of segmentation along the salt nappes. The salt nappe complex in the Kuqa foreland fold-thrust belt is controlled by regional compression, and gravitational gliding and spreading.

Key words: salt nappe, thrust fault, the leading edge of the Kuqa foreland fold-thrust belt, Tarim basin

Characteristics of Structures of Various Levels in the Qaidam Cenozoic Basin

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The deep and shallow structural frameworks are quite different in the Qaidam Cenozoic basin according to a comprehensive interpretation of seismic and non-seismic data. In different stages, the basin's sedimentation is controlled by different structural frameworks. The nearly E-W-trending structures controlled the basin sedimentation in the Paleogene and the NW-trending structures controlled the basin sedimentation in the Neogene. It is indicated that the Qaidam Cenozoic basin is a large superposed basin controlled by structures of different directions in different stage. The characteristics of structural deformation in the deep and shallow strata are different. The fault-block structure mainly develops in the deep strata with reverse basement faults. Decollement folds and faults develop in the middle-shallow strata and the normal faults developed in the core of anticlines are diagonal combination on the surface. The basin experienced multi-cycle sedimentary evolution and later deformations of various types. Different structure combination forms different structural reservoir model. It is very important to recognize these for oil and gas exploration in deep basins, especially for the concealed reservoir exploration.

Key words: Qaidam basin, Cenozoic, structural framework, formation and evolution, structural deformation

The Yanyuan-Lijiang Tectonic Zone: A Cenozoic Intracontinental Orogenic Belt

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The Yanyuan-Lijiang Tectonic Zone acts as the junction zone between the Qinghai-Tibet Tethys and the Yangtze continent. Dating its orogenic age is very important, not only for defining its tectonic nature and evolution and prospecting of mineral deposits in the zone, but also for judging the effects within the Eurasian plate of the collision event between India and Eurasia in depth and area. By combining the tectonic and metallogenetic dating of a series of samples with a comprehensive study on stratigraphy, tectonics, magmatism and metallogenesis, we confirmed that the Yanyuan-Lijiang tectonic zone is a Cenozoic intracontinental orogenic belt rather than an Indosinian orogenic zone. Its orogeny mainly occurred in the second episode of the Himalayan orogeny between the middle Eocene and late Eocene. The orogeny is bound up with the subduction of the Yangtze lithosphere beneath the Qinghai-Tibet Tethyan lithosphere, resulting from the collision between the Eurasian and Indian plates. And it shows multiple-layer detachment and shearing of the crust, and gliding, folding and napping of the sedimentary cover. It is an intracontinental orogeny as the distant effects of the collision between the Eurasian and Indian plates.

Key words: Cenozoic intracontinental orogeny, Eurasia-India plate collision, distant effect, Yanyuan-Lijiang Tectonic Zone

Tectonic Control of Geothermal Resources in the Periphery of the Ordos Basin

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Geothermal reservoir is a precious source of clean energy. A relationship exists between the geothermal activity and tectonics. With the energy exploration in China gradually shifting to the west, abundant low-medium temperature geothermal resources have been found in the Ordos basin, especially in the rift basins in the periphery of the Ordos basin. However, the formation mechanism and property of geothermal resources in the Ordos basin and its peripheral areas have not been studied due to the diversity of working objectives. Based on an analysis of the tectonics of the Ordos basin, the geological structure and geothermal resources in the Ordos basin and its peripheral areas are systematically summarized. The relationship of the tectonics to heat flow, geothermal gradient and geothermal field distribution are studied qualitatively. It is suggested that the value of heat flow and geothermal gradient in the Ordos block are low, while a ring of high anomaly appears in the periphery of the block. Geothermal activities occur mainly in the periphery of Ordos, that is to say, high heat flow and high geothermal gradient are consistent with the tectonics in the periphery of the Ordos basin, indicating that the tectonics controls the geothermal resources in the periphery of the Ordos basin.

Key words: Ordos basin, tectonics, geothermal flow, geothermal resources

Island-Arc Volcanic Rocks in the North Qaidam UHP Metamorphic Belt

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A suite of Early Paleozoic island arc volcanic rocks, consisting mainly of basaltic lavas and some intermediate-silicic rocks, crops out in the North Qaidam basin, northeastern Tibet Plateau. These rocks have been extensively metamorphosed under greenschist facies conditions, and hence differ from the older Proterozoic intermediate-mafic volcanic rocks, which have generally experienced amphibolite-facies metamorphism. The Early Paleozoic volcanic rocks are divided into three groups based on their geochemical characteristics: (1) VTG-I, consisting of island arc tholeiitic basalts, basaltic andesites and andesites that crop out in Jilusu and Shuangkoushan; (2) VTG-II, which are high-Al, alkaline and subalkaline basalts in Jilusu; and (3) VTG-III, an assemblage of MORB-type basalts, andesites and dacites and mostly in Shuangkoushan, with stronger trace elements depletion than N-MORB. Groups VTG-I and II are considered to be typical of mature island arcs produced in two stages. In the first stage, following the initiation of ocean-continent subduction, the island arc tholeiitic volcanic rocks were generated by partial melting of the subsiding oceanic crust and mantle wedge beneath the island arc. As subduction progressed and accelerated, calc-alkaline and high-Al basalts were formed and the crust beneath the island arc was thickened. The third group of volcanic rocks (VTG-III) consists of highly depleted MORB-type lavas, and is believed to have been generated by partial melting of the depleted mantle wedge in an inter-arc basin. The island arc tholeiites are dated at 514.2±8.5 Ma by the U-Pb method on single zircon crystals using LA-ICP-MS. This suggests that an Early Paleozoic ocean-continent subduction took place in the North Qaidam Basin. UHP eclogite in the North Qaidam Belt has been dated at 494 Ma, suggesting that continent-continent collision occurred shortly after the ocean-continent subduction was initiated.

Key words: Island arc volcanic rocks, Inter-arc basin, UHP metamorphic belt, LA-ICP-MS, Early Paleozoic, North Qaidam, Tibetan Plateau

$^{40}Ar/^{39}Ar$ Ages of the Basic Sill Swarms of Two Periods in the Junction Area of Qinling and Kunlun and Its Tectonic Significance

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Basic sill swarms of two periods were found in Lalongwa and Manzhanggang in the southeastern part of the secondary orogenic belt on the eastern margin of the Qaidam basin in the junction area of the Western Qinling and Eastern Kunlun orogenic belt. Their $^{40}Ar/^{39}Ar$ ages are 393.5 Ma and 197.5 Ma. The former was formed in the early period when the northern Paleo-Tethys and the Gonghe aulacogen between the western Qinling Mountains and eastern Kunlun Mountains began to be formed, whereas the latter marked extensional orogenic collapse after the tectonic system closed and collided to form an orogene. Comprehensive studies show that in the middle-late Paleozoic, when the rift from the southern Eastern Kunlun Mountains to A'nyêmaqên and the rift from A'nyêmaqên via Wenxian to Mianlüe grew into an ocean, namely the northern branch of the Eastern Paleo-Tethys, the rift from Kuhai to Sêrtang between the Eastern Kunlun and Western Qinling Mountains failed and became the Gonghe aulacogen. In the late Triassic, this tectonic system began to contract, close and collide to build mountains. Then the northern Eastern Paleo-Tethys was subducted under the Qaidam and Western Qinling terranes and collided to form the Qinling-Kunlun orogenic belt. The Western Qinling and Eastern Kunlun were finally joined laterally due to the closing of the Gonghe aulacogen. This research would provide evidence for the timing of the dynamic evolution of the Western Qinling and Eastern Kunlun Mountains and their junction.

Key words: Western Qinling, Eastern Kunlun, Gonghe aulacogen, basic sill swarm, $^{40}Ar/^{39}Ar$

Metasomatism of Silica-rich Melts (Liquids) in Dunite Xenoliths from Western Shandong, China: Implication for Mesozoic Lithospheric Mantle Thinning

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Petrology, mineral chemistry and trace element geochemistry of dunite xenoliths in gabbro-dioritic rocks from western Shandong indicate that the dunite xenoliths are relicts of high-degree partial melting of ancient (Archean) lithospheric mantle. Two types of mantle metasomatisms occur in the dunite xenoliths, i.e. early CO_2-H_2O-rich anti-active liquid metasomatism representated by interstitial phlogopite and late silica-rich melt (liquid) metasomatism representated by orthopyroxene veins and net orthopyroxene between olivine and chromite. The asthenosphere-derived silica-rich melt (liquid) metasomatism in the upper mantle is a chemical erosion to ancient lithospheric mantle. It is important to understanding the nature of the Mesozoic lithospheric mantle and mechanism of lithospheric thinning.

Key words: Mesozoic, dunite, silica-rich melt (liquid), mantle metasomatism, lithospheric thinning, western Shandong

U-Pb SHRIMP Zircon Ages of the Qichun Granitoids, Hubei Province: Discovery of Weakly Metamorphosed -Unmetamorphosed Granitoids of the Neoproterozoic in the Dabie Mountains

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The Qichun granitoids encompass two types: porphyritic monzonitic granite and granite, which are significantly different in geochemistry. The porphyritic monzonitic granite is characterized by high Al_2O_3 (15.73%), relatively high CaO (2.46%) and Na_2O (Na_2O/K_2O=1.27), and is particularly characterized by strong depletion of HREE and strong fractionation between LREE and HREE ($(La/Yb)_N$=46.8), similar

to Archaean TTG gneiss. But the granite is characterized by relatively low Al_2O_3 (14.05%), poor CaO (0.82%) and high K_2O content compared to Na_2O (Na_2O/K_2O=0.81). The fractionation degree between LREE and HREE is far weaker in the granite than in the porphyritic monzonitic granite. The U-Pb SHRIMP Zircon ages are 824.6±17.6 Ma and 784±20 Ma respectively in the two rock types. These ages are similar to the protolith ages of granitic gneisses in the Dabie orogenic belt. The existence of weakly metamorphosed-unmetamorphosed granitoids in the Dabie orogenic belt shows that the granitoids are situated on the back edge of the subducted plate, maybe the proto-outcrop of the Yangtze basement. And the high-pressure metamorphic rocks around the granitoid body are rootless tectonic microlithons formed by exhumation. The outcrop of high-ultrahigh metamorphic rocks in the Dabie Mountains is not the result of mass uplift and denudation.

Key words: U-Pb dating, SHRIMP, zircon, granite, Jinning period, Dabie Mountains

The High-temperature Garnet-Pyroxenite Enclaves in the Spinel-bearing Peridotite: Evidence for Partial Melting of the Upper Mantle in Northern Dabie Mountains, China

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The spinel-bearing peridotite massif occurring near Raobazhai, Huoshan County of northern Dabie Mountain, is the largest upper mantle relict slab in the Dabie Mountain area. The massif was emplaced as a rootless lenticular intrusion of solid state into the plutonic gneiss complex of Dabie Mountain. The eclogite and garnet pyroxenite enclaves are of high-temperature genesis and are products of partial melting of the upper mantle. In the Pl-CIPW versus Al_2O_3 wt% diagram the high-temperature eclogites are plotted into the tholeiite field rather than that of calc-alkaline basalts. The REE distributions of the garnet pyroxenite and the spinel-bearing peridotite are of similar flat patterns, only the total REE of the latter are lower than those of the high temperature eclogites. The plots in the Ni-Co-Sc ternary diagram show that the eclogite and garnet pyroxenites are plotted close to the trend line of deep-seated basalts, while the spinel-bearing peridotites are plotted along the trend of ultramafic relics, which clearly reveals the partial melting of the upper mantle in northern Dabie Mountain. The spinel in the peridote is defined as pleonaste, the $Cr^{\#}$ of which is rather low ($Cr^{\#}$ = 12–21), while the associated olivine are Fo-rich (Fo = 92–93), indicating that the partial melting was just at its initial stage, estimated at 15%. The low content of TiO_2 in spinel suggests a low oxygen fugacity during the melting of the mantle. The occurrence of the Raobazhai spinel-bearing peridotite massif shows that accompanying the exhumation and uplift of the UHP rock units there must be some upper mantle fragments being carried up to the shallower levels. Due to the upwelling of the asthenosphere or the break-off of the subducting slabs, the extruded rock slab could maintain a high temperature regime. This had caused the earlier deep-seated granulite-facies retrometamorphism, which was later shifted to high amphibolite-facies retrometamorphism during the subsequent uplift.

Key words: spinel, peridotite, partial melting of upper mantle, high-temperature eclogite, deep-seated retrometamorphism

$^{40}Ar/^{39}Ar$ Dating of Deformation Events and Reconstruction of Exhumation of Ultrahigh-Pressure Metamorphic Rocks in Donghai, East China

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Recent investigations reveal that the ultrahigh-pressure metamorphic (UHPM) rocks in the Donghai region of East China further underwent ductile and transitional ductile-brittle structural events during their exhumation. The earlier ductile deformation took place under the condition of amphibolite facies and the later transitional ductile-brittle deformation under the condition of greenschist facies. The hanging walls moved southeastward during both of these two events. The $^{40}Ar/^{39}Ar$ dating of muscovites from muscovite-plagioclase schists in the Haizhou phosphorous mine, which are structurally overlain by UHPM rocks, yields a plateau age of 218.0±2.9 Ma and isochron age of 219.8 Ma, indicating that the earlier event of the ampibolite-facies deformation probably took place about 220 Ma ago. The $^{40}Ar/^{39}Ar$ dating of oriented amphiboles parallel to the movement direction of the hanging wall on a decollement plane yields a plateau age of 213.1±0.3 Ma and isochron age of 213.4±4.1 Ma, probably representing the age of the later event. The dating of pegmatitic biotites and K-feldspars near the decollement plane from the eastern Fangshan area yield plateau ages of 203.4±0.3 Ma, 203.6±0.4 Ma and 204.8±2.2 Ma, and isochron ages of 204.0±2.0 Ma, 200.6±3.1 Ma and 204.0±5.0 Ma, respectively, implying that the rocks in the studied area had not been cooled down to closing temperature of the dated biotites and K-feldspars until the beginning of the Jurassic (about 204 Ma). The integration of these data with previous chronological ages on the ultrahigh-pressure metamorphism lead to a new inference on the exhumation of the UHPM rocks. The UHPM rocks in the area were exhumed at the rate of 3–4 km/Ma from the mantle (about 80–100 km below the earth's surface at about 240 Ma) to the lower crust (at the depth of about 20–30 km at 220 Ma), and at the rate of 1–2 km/Ma to the middle crust (at the depth of about 15 km at 213 Ma), and then at the rate of less than 1 km/Ma to the upper crust about 10 km deep at about 204 Ma.

Key words: ultrahigh-pressure metamorphic rocks, structural deformation, $^{40}Ar/^{39}Ar$ dating, exhumation, Donghai, East China

Tectonic Evolution and Mineralization Systems of the Yidun Arc Orogen in Sanjiang Region, China

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As a composite orogenic belt of the Himalaya giant orogenic zone, Yidun arc, Sanjiang region (means three rivers region, i.e.: Jinsha River, Nujiang River and Lancang River), experienced an evolution history including Indosinian subduction orogeny of oceanic crust, Yanshanian arc continental collision orogeny and Himalayan intracontinental strike sliding shearing. Probably due to different subduction dipping degrees, the Yidun old arc belt of late Triassic (206–237 Ma) has a different development history in its northern and southern segments. Changtai arc in the northern segment was characterized by

intra-arc rift with expanding nature and developed a fluid convergent ore-foming system in an extentional environment, which formed. VMS-type Zn-Pb-Cu deposits and epithermal Ag-Au-Hg deposits. Zhongdian arc of the southern segment lacked back-arc basin, but had extensive calcalkaline complex distribution of arc volcanics-porphyry-porphyrite, which formed porphyry-skarn-type Cu-polymetalic deposits. During the arc-continental collisional process of Triassic-Jurassic boundary, early contineutal plate subduction led to formation of syn-collisional granites (200 Ma), whereas late post-orogenic extention resulted in intrusion of A-type granites (75–138 Ma), which was accompanied by development of convergent magma-fluid ore-forming system under an extensional regime and formation of skarn-type tin deposits and fault-controlled hydrothermal Ag-polymetallic deposits. Strong lithospherical shearing and thrusting resulted from Yangtze continental plate subduction caused development of a convergent fluid system under a compressional-shearing environment and formation shearing type Au deposit in the Garze-Litang ophiolitic melange zone. The effect of the Indian-Asian continental collision in the Yidun arc zone was mainly manifested in intra-continental strike-sliding process and alkaline granite and porphyry intrusion (50–30 Ma). The latter brought us porphyry Au deposits.

Key words: island arc, orogenic belt, magmatic activity, ore-forming system, Yidun

Molybdenite Re-Os Precise Dating for Molybdenite from Cu-Au-Mo Deposits in the Middle-Lower Reaches of Yangtze River Belt and Its Implications for Mineralization

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The Middle-Lower Yangtze River metallogenic belt is an important corridor for Cu-Au-Mo-Fe deposits in East China. Because there are porphyry-skarn Cu-Au-Mo deposits, and stratabound Cu-Au-Mo deposits, their origins have been strongly controversial for a long time. We obtained eleven molybdenite samples from five skarn-porphyry Cu-Au-Mo deposits and the other five samples from the Datuanshan strata-bound Cu-Au-Mo deposit for Re-Os dating. The total 16 samples are dated with the ICP-MS method and 9 of them are dated by NTIMS. The results from the two methods of ICP-MS and NTIMS are almost concordant each other. Re-Os model ages of 16 molybdenite range from 134.7±2.3 to 143.7±1.6 Ma (2σ) in which the model ages of the five samples from the Datuanshan deposit are quite close, varying from −138.0±3.2 to 140.8±2.0 Ma, averaging 139.3±2.6 Ma, their corresponding isochron is 139.1±2.7 Ma with initial Os value of 0.7±8.1 (MSDW=0.29). These data definitely reflect the porphyry-skarn Cu-Au-Fe-Mo deposits and the stratabound skarn Cu-Au-Mo deposits share the same forming ages and are the products of a same metallogenic system. They all occurred at the time of the transition stage of geodynamic regimes i.e. from the main compression regime in the north-south direction to quickly significant extension in the EW direction.

Key words: Re-Os isotopic dating, porphyry-skarn Cu-Au-Mo deposits; middle-Lower Yangtze ore belt

Dating of the Dachang Giant Tin-Polymetallic Deposit in Nandan, Guangxi

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The Dachang giant tin-polymetal deposit in Nandan, Guangxi, is one of the largest tin deposits all over the world. However, this deposit has long been in debate as to its origin. There are different opinions, one is that the Dachang deposit was formed by replacement of hydrothermal solution originated from Yanshanian granites, the other is that this deposit was formed by submarine exhalation at Devonian. This paper presents some new isotopic geochronology data by using the $^{40}Ar/^{39}Ar$ method on quartz and sanidine from massive ores in the No. 91 orebody and the No. 100 orobody. Analytic results show that the No. 91 orebody was formed at 94.52±0.33 Ma (plateau age by $^{40}Ar/^{39}Ar$ method of quartz) or 91.4±2.9 Ma (plateau age by $^{40}Ar/^{39}Ar$ method of feldspar), while the No. 100 orebody was formed at 94.56±0.45 Ma (plateau age with the $^{40}Ar/^{39}Ar$ method of quartz), suggesting that both the No. 91 and the No. 100 orebodies were formed at the Late Yanshanian instead of the Devonian. The No. 100 orebody might be formed by filling of orematerials at a pole-cave located in the reef-limestone. Because the ore-bearing solution lost its high press and lowered its temperature suddenly at the cave environment, ores were formed concentratedly, with solutions disappearing quickly and less alteration in the host rocks.

Key words: giant tin-polymetallic deposit, Dachang, Guangxi, $^{40}Ar/^{39}Ar$ age, geochronology, pressure loss and evaporation

Tomography in the Chinese Continental Scientific Drilling Area of Donghai County, Jiangsu Province, China

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The Sulu-Dabie orogenic belt is a typical UHP zone with outcropping of eclogites. The CCSD (Chinese Continental Scientific Drilling) project chose Donghai County which is covered by widespread eclogites as the first site for deep drilling, because this will be of great significance in disclosing the geodynamic processes of the post-collisional orogeny and later deformation and exhumation. However, the lack in data for the deep geology of this area makes tomography one of the most

important methods for velocity perturbation analysis of deep materials, and it may serve as a guide for deep surveys of the area. We arranged a crossed profile at the center of the drilling site at N340W and N70E. The results of the tomography show that the 3rd layer is consistent with the variations of the Bouguer anomaly, and related to the Moho. Both the high velocity perturbation and high gravity appear at the center, and the Tanlu and Jiashan-Xiangshui faults both show as boundaries between high and low velocities and gravities. The NS section perpendicular to the structural strike can be divided into three parts, which represent the Yangtze, Sulu and North China plates respectively. The fault in the southern part is steeper with discontinuous dipping high-velocity bodies, while the faults in the northern part are all dipping north, obviously controlled by the Tanlu fault. There are three zones of abrupt changes for high- and low-velocity bodies at depths below 200 km, which are at 30 km, 80 km and 130 km, corresponding to the depths of the Moho, the lithosphere and the asthenosphere, respectively. This framework reflects the features of lithosphere activity controlled by deep faults in the Sulu area.

Key words: tomography, UHP metamorphic zone, Chinese Continental Scientific Drilling, Donghai County, Jiangsu Province